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**THE COMMONWEALTH OF MASSACHUSETTS
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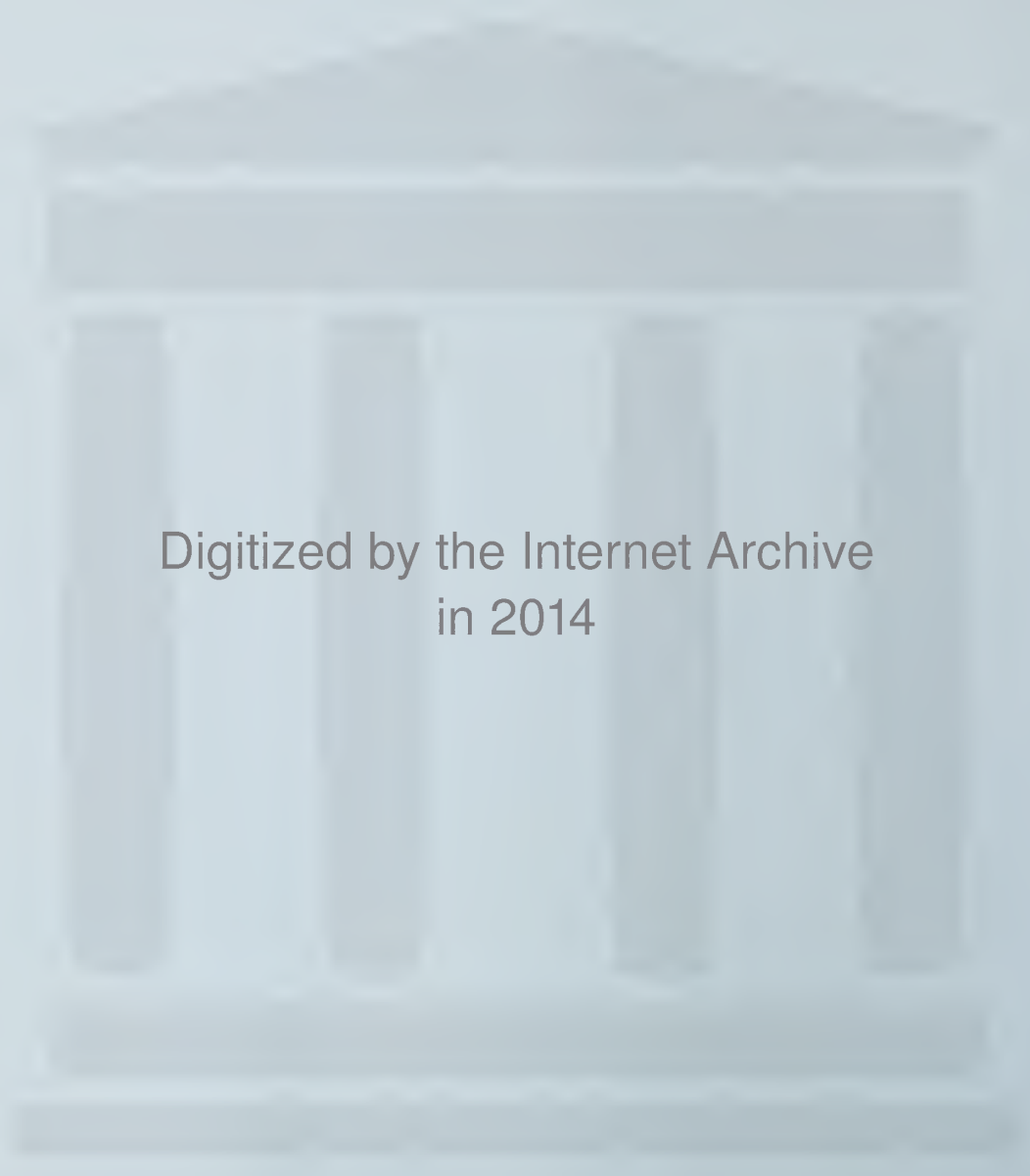
**Bechtel/Parsons Brinckerhoff's
Management of a Design Contract
for
The Central Artery/Tunnel Project**

**GOVERNMENT DOCUMENTS
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**Robert A. Cerasoli
Inspector General
November, 1994**



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ROBERT A CERASOLI
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November 1994

His Excellency the Governor

The Honorable President of the Senate

The Honorable Speaker of the House

The Honorable Chairman of Senate Ways and Means

The Honorable Chairman of House Ways and Means

The Executive Directors of the Legislative Post Audit Committees

The Secretary for Administration and Finance

Members of the General Court

Omnibus ad quos praesentes literae pervenerint, salutem.

I am today releasing a report concerning the contract between MassHighway and DeLeuw, Cather & Company for the Central Artery/Tunnel Project's Integrated Project Control System (IPCS). The report focuses on the process by which the joint venture of Bechtel/Parsons Brinckerhoff (B/PB), acting on behalf of MassHighway, has managed this contract, including its modification and two exemptions from State service contract regulations.

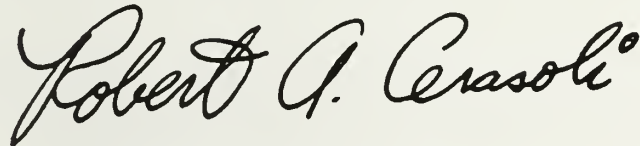
I have concluded that MassHighway did not receive the level of service it contracted for and should expect from B/PB and DeLeuw, Cather & Company. I have not attempted to determine the extent to which responsibility for these problems should be apportioned among the parties. B/PB performed poorly as contract administrator; DeLeuw, Cather & Company failed to perform adequately; and MassHighway failed to monitor adequately B/PB's performance. I have also concluded that management problems documented in this report are not unique to the IPCS contract. My Office will continue to provide technical assistance and alert MassHighway to problems in this area.

MassHighway should apply the lessons learned to other contracts on the Project. MassHighway has begun to take steps to increase its control over the CA/T Project and to hold firms -- including B/PB -- accountable for meeting contract terms. These steps include a management review of MassHighway and B/PB and new procedures to ensure compliance with State service contract regulations.

CA/T Project managers have been fully apprised of my concerns and accorded ample opportunity to review and comment on the report. The Project's formal written response is included at the end of the report.

I would like to thank Noreen Hazelton, Chief of my Contract Audit and Review Division, for conducting this extensive review and authoring this report.

Sincerely,

A handwritten signature in black ink, reading "Robert A. Cerasoli". The signature is written in a cursive, flowing style with a small circle at the end of the last name.

Robert A. Cerasoli
Inspector General

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EXECUTIVE SUMMARY

In 1985, the Massachusetts Highway Department (MassHighway) selected the joint venture of Bechtel/Parsons Brinckerhoff (B/PB), comprised of Bechtel Corporation and Parsons Brinckerhoff Quade and Douglas, Inc. to manage the CA/T Project. In addition to overall Project management, B/PB is charged with preliminary design, design management and construction management.

On April 4, 1991, MassHighway executed an eight-year, \$10.9 million contract with DeLeuw, Cather & Company (DeLeuw) to design the Integrated Project Control System (IPCS). The purpose of the IPCS is to ensure that traffic flows smoothly and safely through the CA/T and to provide support for the operation and maintenance of CA/T facilities. The IPCS will monitor and control buildings and roadways through a remote surveillance, data acquisition and control system. This report focuses on the process by which B/PB, acting on behalf of MassHighway, has managed MassHighway's contract with DeLeuw.

The Inspector General has concluded that MassHighway did not receive the level of service it contracted for and should expect from B/PB and DeLeuw. B/PB performed poorly as contract administrator, DeLeuw failed to perform adequately, and MassHighway failed to monitor adequately B/PB's performance. This conclusion is based on the following problems revealed in our review:

1. DeLeuw's contract will nearly triple to \$28.5 million because of extra work and cost overruns.¹
2. DeLeuw's slippage in scheduled design submissions delayed the first IPCS construction package by at least a year.
3. Despite evidence of DeLeuw's inability to meet its contractual obligations, poor performance, and contract violations, B/PB did not initiate adequate action to correct DeLeuw's staffing and performance problems.
4. B/PB did not adequately document the extent of the problems with the DeLeuw contract and the implications for the Project.

¹This Office acknowledges that with the recent cancellation of \$8.1 million in extra services and the removal of the CO22A2 design package, DeLeuw's contract value is now lower than the \$28.5 million projected at the time of this review. Nonetheless, the total cost to design the IPCS is likely to exceed \$28.5 million when MassHighway completes negotiations with DeLeuw, B/PB, and the new IPCS design firm.

5. B/PB misused terms and inaccurately reported costs in documents it prepared to exempt work added to DeLeuw's contract from State regulations requiring competitive procurement of services.

The total cost for designing the IPCS will escalate further with MassHighway's decision to reprocure the C22A2 design package. The time required for this reprocurement process, coordination among the parties involved, and management of this effort will be costly. In addition, the delay will impact several other design packages at a cost that has yet to be determined by MassHighway.

The Inspector General has concluded that management problems documented in this report are not unique to the IPCS contract. MassHighway's failure results in part from the untenable situation it has created for itself. At the time of this review, MassHighway employed only about 40 staff members to oversee B/PB's efforts to manage the Project through approximately 1,200 administrative, technical and professional staff. Of these 1,200, about 29 were so-called "seconded" positions -- that is, staff paid by B/PB but assigned to MassHighway. Even in this arrangement, MassHighway signals its dependence on B/PB.

Only MassHighway is in a position to apportion blame for this situation and apply the lessons learned to other contracts on the Project. MassHighway has begun to take steps to increase its control over the CA/T Project and to hold firms -- including B/PB -- accountable for meeting contract terms. These steps include a management review of MassHighway and P/PB and new procedures to ensure compliance with State service contract regulations. The Inspector General's recommendations include:

1. Define the new C22A2 design package -- and the qualifications and performance requirements -- before readvertising. Make use of the hard lessons learned since Deleuw was first hired over three years ago.
2. Ensure that the remaining Project construction bid packages are complete before they are put out to bid. Stop using contract modifications and change orders to make up for incomplete preliminary and final design work.
3. Stop B/PB's misuse of terms and inaccurate costs in documents that seek waivers for MassHighway from State regulations. Stop instructing DeLeuw to begin work and modifying its contract before applying for waivers. MassHighway has requested, and this Office is providing, technical assistance in addressing this problem.

4. Strengthen MassHighway's ability to monitor B/PB's performance by increasing its staffing levels for contract administrators and technical professionals.
5. Institute contract administration policies to flag any contract that shows cost increases that individually total five percent and cumulatively total 10 percent of the original contract value.

This Office will continue to provide technical assistance and alert MassHighway to problems in this area.

INTRODUCTION

The \$7.7 billion Central Artery/Tunnel (CA/T) Project is a 7.5 mile interstate highway project that will replace Boston's elevated Central Artery with an underground roadway and extend the Massachusetts Turnpike to Logan International Airport through a new tunnel under Boston Harbor. The Project, now scheduled to be completed in the year 2004, has three overlapping phases: planning and design development, design, and construction. The harbor tunnel portion of the Project is currently in the construction phase. Significant portions of the Project are still in the design phase.

The joint venture of Bechtel/Parsons Brinckerhoff (B/PB), comprised of Bechtel Corporation and Parsons Brinckerhoff Quade and Douglas, Inc., was selected by the Massachusetts Highway Department (MassHighway) in 1985 to manage the Project. In addition to overall Project management, B/PB is charged with preliminary design, design management and construction management. According to the Project Management Plan, B/PB:

is responsible and accountable for the successful completion of the project within budget, on schedule, to quality standards approved for the project, and to the satisfaction of the Department.

The Project is currently divided into 56 design packages. According to the most recent information available to this Office, B/PB has completed preliminary design for 41 design packages. Most design packages are area-specific, such as the South Boston Interchange and the East Boston Toll Plaza and Facilities. Other design packages have a project-wide impact, such as the Integrated Project Control System (IPCS), the subject of this report.

The purpose of the IPCS, estimated by B/PB to cost \$136 million to construct, is to ensure that traffic flows smoothly and safely through the CA/T and to provide

support for the operation and maintenance of CA/T facilities. The IPCS will monitor and control buildings and roadways through a remote surveillance, data acquisition and control system. For example, the IPCS will detect fires and security problems and will monitor and control the CA/T's ventilation, power, drainage, electrical and lighting systems. This state-of-the-art system includes extensive communication systems consisting of a data communications "backbone," video image transmission, and radio and telephone equipment. A toll operations system is also included in plans for the IPCS.

The IPCS will be housed in an operations control center in which operators will be stationed at up to 10 consoles where they will view a wall of 54 color monitors and 18 projection screens.¹ These operators will monitor buildings and roadways to detect problems and control traffic flow. The IPCS will identify problems and then operators will confirm and respond to those problems. There will also be a back-up operations control center, with 90 color monitors, located in another building a few blocks away in case of a disaster or system failure at the operations control center.

On January 31, 1990, MassHighway advertised for the IPCS design contract. DeLeuw, Cather & Company was chosen as the best qualified from the field of firms submitting proposals to design the IPCS. On April 4, 1991, MassHighway executed an eight-year, \$10.9 million contract with DeLeuw. According to staff interviewed by this Office, MassHighway plans to extend DeLeuw's contract from July 1999 to July 2003 to reflect the Project's revised completion date previously scheduled for 1998 and now delayed to 2004. The cost associated with the new IPCS completion date is currently being negotiated. B/PB estimated that the extension will add \$3 million to DeLeuw's contract.

¹Planning for this facility was the subject of a March, 1993, report of the Inspector General entitled *Hazards Ahead: The Operations Control Center Complex for the Central Artery/Tunnel Project*.

B/PB is responsible for overseeing DeLeuw's design work and has primary responsibility for managing the design contract. B/PB plays a central role in any design contract changes. According to Project procedures developed by B/PB and approved by MassHighway, a pending change notice (PCN) is the first step in introducing a change to a contract. In a PCN, B/PB provides to MassHighway information on the estimated cost and schedule impacts of the proposed change, and the reasons for the change. In most instances, if MassHighway approves the PCN, the consultant -- in this case DeLeuw -- presents to MassHighway a proposal for the change. B/PB then negotiates the scope of the work, the schedule, and the cost with the consultant. Once MassHighway approves a change, the contract is modified. A contract modification may encompass a single PCN or group of PCNs.

This Office has reviewed B/PB's performance as of July 1994 in managing DeLeuw's contract to design the IPCS. The review examined the process by which B/PB, acting on behalf of MassHighway, has managed the IPCS design contract, including DeLeuw's original contract, the modifications to the contract, and two exemptions from State service contract regulations.

FINDINGS

Finding 1: DeLeuw's \$10.9 million contract will nearly triple to \$28.5 million.

MassHighway has already added \$5.2 million to pay for services added after it awarded the IPCS design contract to DeLeuw. Twenty-two new services, estimated by MassHighway at \$11.4 million, are being added to DeLeuw's contract. This work will nearly triple the cost of DeLeuw's original \$10.9 million contract:²

DeLeuw Contract Summary
(in millions)

Original Contract	\$10.9
Original Contingency Fund	1.0
Added to Contingency Fund	5.2
Needed for 22 new services	11.4
TOTAL	<u>\$28.5</u>

The Commonwealth pays DeLeuw on a "cost-plus-net-fee" basis comprised of four basic categories: direct salary costs, indirect costs, direct expenses, and net fee (i.e., profit). The total of these four categories (\$10.9 million) was the amount MassHighway negotiated with DeLeuw to pay for the services included in the scope of work detailed in the contract. In addition, the DeLeuw contract

²This Office acknowledges that with the recent cancellation of \$8.1 million in extra services and the removal of the CO22A2 design package, DeLeuw's contract value is now lower than projected at the time of this review. Nonetheless, the total cost to design the IPCS is likely to exceed \$28.5 million when MassHighway completes negotiations with DeLeuw, B/PB, and the new IPCS design firm.

originally included a Special Engineering Contingency Fund of \$1,034,897. According to the DeLeuw contract:

The CONSULTANT (DeLeuw) may be compensated for the performance of Special Engineering and other services under this Contract which may be required or occur during performance of the SERVICES hereunder. Such SERVICES shall be provided under the written, prior direction of the MANAGEMENT CONSULTANT (B/PB) on behalf of, and at the discretion of the DEPARTMENT in accordance with Article 9.0, "CHANGES". . . .

The Contingency Fund amount was estimated by B/PB to cover any unanticipated services that MassHighway might require. MassHighway is not obligated to pay DeLeuw the contingency money. Each payment category, including the Contingency Fund, has a maximum payment amount which cannot be exceeded except "by agreement of all parties, and with the concurrence of the FHWA (Federal Highway Administration) "

MassHighway has informed this Office that it expected this Contingency Fund to be depleted and subsequently replenished as work was added to DeLeuw's contract. In just over three years, B/PB has presented 75 PCNs to MassHighway for approval. Of these, 32 have been incorporated in 22 modifications to DeLeuw's contract, 21 have been cancelled and 22 are progressing through the approval process. (See Figure 1.) DeLeuw has been instructed by the CA/T Project Director to begin work on \$2.3 million in services described in 10 of the 22 changes that have not yet been approved as contract modifications.

FIGURE 1. DeLeuw Cather & Co. Contract Modifications

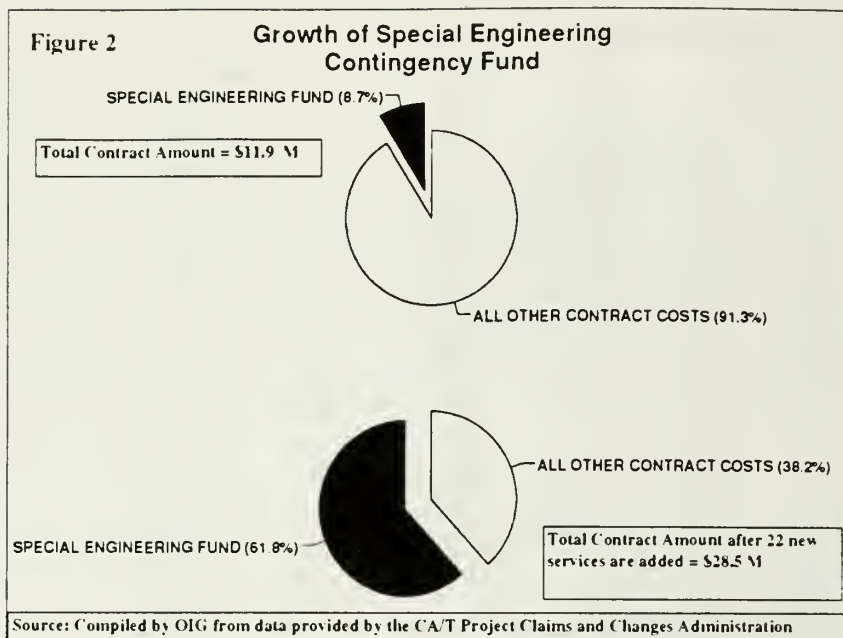
Modification (MOD) No.	Pending Change Notice (PCN) No.	Description	MOD Value For SERVICES	MOD Value For FUNDING
01	006	Reallocation of Maximum Payment Amount	\$0 *	
02	001	Traffic Count Program	\$99,643	
03	002R1	Interim Operations Control Center	\$591,821	
04	010	Projectwide Roadway Striping	\$129,388	
05	004	Delay in Receipt of NTP	\$78,847	
06	008	Special Engineering Cost Adjustment		\$2,000,000
07	024	Transfer for Use of C.T. Mein	\$0 *	
07	016	Revised Project Control Standards	\$16,162	
07	009	Overheight Vehicle Attenuator	\$298,129	
08	027	Use of Temporary Support	\$0 *	
08	005	Addition of D007D to Early Build Package	\$12,702	
08	021	Modify Ventilation Control Strategy	\$10,258	
09	013	Adoption of CLV Scheme	\$281,719	
10	015	FHWA Sign Revs In D004A, 5A, 7A & 13A Area	\$176,148	
11	022	TSCS Coverage So. Boston Bypass/Haul Road	\$432,989	
12	025	Addition of Temporary IPCS Lines	\$36,303	
13	036	Special Engineering Cost Adjustment		\$2,700,000
14	039	Hazardous Cargo Signs	\$5,864	
14	028	Sign Support Changes in East Boston	\$143,768	
14	034	Sign Support Revisions in D005B Area	\$151,563	
14	035	BFD Revisions, Fire Alarm & Comm Systems	\$43,617	
15	011	Revision to Cont. Proj. Downs Stand - Seismic	\$60,502	
15	026	Access Control Criteria Changes	\$21,814	
16	020	Mod C22A1 - Software Elements for Early Build	\$784,713	
17	019R	Tail System Enhancements	\$428,768	
17	020A	Software Elements for Final Build	\$0	
18	018	BFD Fire Telephone	\$135,664	
18	045	Additional Points for Pumping Station	\$16,755	
19	017R1	75% Review Scope Items	\$116,000	
20	058R1	Increased Special Engineering Costs		\$544,000
21	050	Traffic Counting Problems	\$21,906	
22	023	IPCS - Temporary Control Center	\$215,000	
22	044	Interim Operations Control - Alternate VMS Locations	\$117,411	
22	048	Availability Testing Redesign Effort	\$135,851	
TOTAL VALUE			\$4,573,295 +	\$5,244,000 = Grand Total \$9,817,295

* These three items totalling \$163,753 were paid by transferring money from within the current contract. Therefore there was no additional cost to the contract.

NOTE: B/PB has presented 75 changes to the Department for approval. Of the 75 contract changes, 21 have been cancelled, 22 are progressing through the approval process, and the remaining 32 have been incorporated in 22 modifications to the Department's contract with DeLeuw.

Source: Compiled by OIG from data provided by CA/T Project Changes and Claims Administration.

MassHighway has added \$5,244,000 to the \$1,034,897 Contingency Fund for a total of \$6,278,897. Of this amount, \$4.6 million has been paid for the 22 service modifications to the contract. The additional 22 services that will become modifications to the contract will require \$11.4 million and cause the Contingency Fund to increase to \$17,668,111. In other words, services added to DeLeuw's contract **after** it was awarded will account for more work than those services which were included in the original contract. (See Figure 2.)



B/PB did not, as MassHighway claimed, place cost caps on charges for all services DeLeuw performed prior to contract modifications.

MassHighway informed this Office in May 1994 that B/PB placed caps on the cost for additional work DeLeuw performed before the contract was modified. This Office requested documentation of cost caps for the 24 services DeLeuw had been directed to perform prior to its contract being modified. In response, MassHighway provided a letter, dated April 27, 1994, from B/PB staff to DeLeuw's project manager informing him that cost caps had been placed on four services. This directive had been issued months -- and for one of these services, nearly a year -- after DeLeuw was directed by MassHighway to perform the work. DeLeuw responded on May 19, 1994, by informing B/PB staff that two of the four services could not possibly be capped at \$75,000 and \$50,000 because they were nearly completed. DeLeuw's proposals for this work, \$300,000 and \$135,000, still had not

been negotiated. The final negotiated price for these two services was \$500,851 (\$365,000 and \$135,851). This price was at least double B/PB's earlier estimates of between \$100,000 - \$150,000 and \$50,000 - \$100,000 for these services.

On June 1, 1994, after negotiations, B/PB staff notified DeLeuw that, "(b)ased on this negotiation, the cap on expenditures . . . is lifted."

Modifications to DeLeuw's contract have far exceeded B/PB's expectations.

The number of modifications to the DeLeuw contract has gone beyond what was anticipated by B/PB management. In a memo to B/PB's Claims and Change Administration Manager regarding DeLeuw's request for funds to cover the cost of preparing PCNs, B/PB's Project Engineering Manager stated:

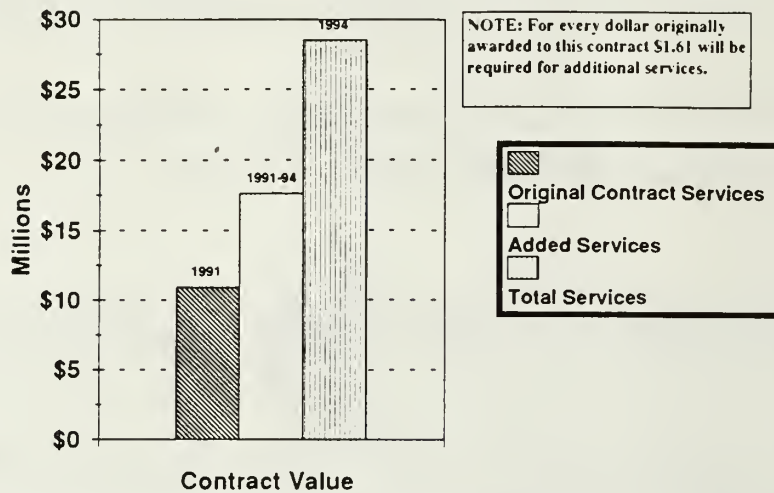
For those contracts that have not been allow(ed) a budget adjustment to date, the rational (sic) was based on the fact that the original scope of services allowed for such services, in that **changes were contemplated** and could be performed by budgeted staff within the jobhours originally negotiated. I agree with this rational (sic) up to the point that the number of **changes begin to exceed a reasonable level**. I think that in the majority of cases, **the reasonable level originally anticipated has been exceeded**. (Emphases added.)

At the time of this Office's review, for every dollar originally awarded to DeLeuw, an additional \$1.61 would be needed to pay for modifications to the contract. (See Figure 3.)

Figure 3

Contract Value

DeLeuw Cather & Co. - Contract # 91395



Source: Compiled by OIG from data provided by the CAT Project Claims and Changes Administration

Examples of Design Services Added to DeLeuw's Contract

Listed below are three examples of work MassHighway added to DeLeuw's contract. In two of the three cases, B/PB did not include the work in the scope of services it prepared for the IPCS design contract. In the third example, the expanded scope resulted in DeLeuw redesigning work it had, at B/PB's direction, already performed.

- **Less than two weeks after DeLeuw began work, B/PB proposed adding design work -- the Interim Operation Control Center -- at a cost of \$591,821.**

The Interim Operation Control Center (IOCC) is a facility for monitoring traffic activity during the construction phase of the Project. It will also advise motorists of traffic conditions via radio, telephone and signs showing traffic delays and

alternate travel routes. This first operational piece of the IPCS design was not included in either the advertised scope of services or DeLeuw's original contract. Less than two weeks after DeLeuw began work on the IPCS design, B/PB proposed that DeLeuw design the IOCC at a cost of \$591,821. This design addition, equivalent to five percent of the work in the contract which had just been issued, consumed more than half of the original Contingency Fund amount.

In a February 1993 interview with CA/T staff, this Office asked why the IOCC design work was not included in the Request for Proposals/Qualifications for the IPCS design package when the work was advertised in January 1990. CA/T staff replied that they had intended to include the design work for the IOCC in the IPCS design package, but "the concept for the IOCC had to be developed and implemented first." When the concept was finally developed, B/PB initiated a contract change to add this design work to DeLeuw's contract.

- **A year after DeLeuw began work, B/PB recommended adding design work for overheight vehicle attenuators at a cost of \$298,129.**

Neither B/PB's preliminary design for the CA/T Project nor B/PB's preliminary design for the IPCS included a method for protecting CA/T highway structures from overheight vehicles. An overheight vehicle attenuator (OHVA) is a physical obstruction attached to a steel girder that hangs over the roadway. If a vehicle is overheight, its roof will make contact with the OHVA and alert the driver to exit the roadway. OHVAs, which can cause extensive damage to vehicles, are used as a last resort for drivers who do not heed the roadway's other alerting methods such as flashing and variable messages signs that instruct drivers to exit the roadway. The purpose of OHVAs is to prevent damage to highway structures caused by overheight vehicles.

When questioned by this Office, B/PB staff stated that prior to choosing a protection method, it was necessary to explore the Commonwealth's liability associated with each of the various options. Discussions were in progress when B/PB completed its preliminary design of the CA/T Project. According to B/PB staff, they "could not wait" for those decisions to be made because waiting would have impacted the Project's schedule. B/PB staff stated that a decision still had not been made in 1990 when B/PB was formulating the IPCS design package. Therefore, B/PB included responsibility for *detecting* overheight vehicles on CA/T Project roadways in DeLeuw's original contract, but did not include a method for *protecting* the highway structures. A year into the DeLeuw contract, the decision for the method of overheight protection was finally made. B/PB recommended adding the new \$298,129 design work to DeLeuw's contract.

B/PB included inaccurate statements in change documents it prepared for MassHighway. In justifying the decision to give DeLeuw this extra work, B/PB included the following in the change documents:

The DO22A SDC is presently responsible for determining the appropriate locations of OHVA, however the responsibility to design the attenuator itself is not included in any SDC's scope.

This statement was false. DeLeuw's contract did not contain the responsibility to locate OHVA.

Similarly, B/PB inaccurately claimed in these same change documents that a justification for the sole source award was performed. According to federal regulations, a "Sole Source Justification" details the rationale for awarding work without full and open competition. B/PB documents stated that a justification had been written by B/PB. In response to this Office's request for the document, B/PB contradicted its earlier statement:

Although the section called "WHO" in the Finding of Fact for PCN-009 states that "**A sole source justification** is attached", a thorough review by the Claims and Changes Administration Group has shown that one would never have been required and subsequently **never developed**. Unfortunately this statement appears to be a clerical error and not intentional. (Emphases added.)

MassHighway relies on B/PB's change documents for its decision-making. It is imperative that the information provided be accurate. This was not the case in either the OHVA change documents or the change listed below to the South Boston Bypass/Haul Road.

- **B/PB misrepresented the purpose of a \$432,989 contract change for traffic surveillance and control systems (TSCS) on the South Boston Bypass/Haul Road.**

According to documents B/PB submitted to MassHighway, a \$432,989 modification was required in order to expand the traffic surveillance and control systems (TSCS) to the South Boston Bypass/Haul Road. In justifying the addition to DeLeuw's contract, B/PB explained that the work was needed to eliminate "what would otherwise be a gap" in IPCS coverage.

This Office asked CA/T staff to describe the circumstances which led to this "gap." According to CA/T staff, the intended purpose of the South Boston Bypass/Haul Road had changed. B/PB's Authorized Representative for the IPCS contract explained that road access was originally planned to be limited to trucks bypassing the CA/T roadway and transporting hazardous material not allowed on the CA/T roadways. Originally, TSCS coverage was not needed. He said that because of major delays in other CA/T Project areas, CA/T management decided to proceed with the Project in phases. This decision changed the function of the South Boston Bypass/Haul Road; it would now be used as an integral part of the first phase opening of the third harbor tunnel. Roadway traffic would now include

buses, taxis, limousines, and other commercial vehicles. This expansion created the need for monitoring and control devices on the roadway and, according to B/PB change documents, would cost between \$50,000 and \$100,000.

Other documents prepared by B/PB depict a substantially different picture of the design change. In addition to the design work needed to eliminate the "gap" in IPCS coverage, extensive redesign of a portion of the roadway was needed. For example, the Bypass portion of the roadway's design already included broad TSCS coverage and the services DeLeuw was asked to perform were actually for the **redesign and reduction** of coverage already chosen by B/PB in its IPCS preliminary design for the South Boston Bypass/Haul Road. In fact, seven weeks before B/PB initiated this TSCS coverage change, B/PB staff met to review the design of the South Boston Bypass/Haul Road. Minutes of this August 6, 1992, meeting describe the roadway's preliminary design as:

an extensive array of variable message signs (VMS), lane signals, variable speed limit signs, loop detectors, and CCTV cameras.

A week later, B/PB held a meeting with DeLeuw. B/PB minutes state that the purpose of the meeting "was to limit unnecessary work" by informing DeLeuw of a future PCN that would "significantly impact the TSCS design on this roadway." B/PB provided DeLeuw with the following description of the TSCS change to the roadway:

PCN-22 will significantly reduce the signage on the South Boston Bypass Road. All Variable Speed Limit Signs (VMS), all Lane Use Signals (LUS), and most Variable Message Signs (VMS) located on the South Boston Bypass Road in the current design will be removed.

This description is quite different from the one provided to MassHighway in change documents. To MassHighway, B/PB stated that there was a "gap in

coverage." B/PB's minutes also described other TSCS coverage design additions, modifications, and eliminations from B/PB's preliminary design.

B/PB negotiated a price with DeLeuw that included \$48,860 for future undetermined changes. B/PB originally estimated the cost of this change at between \$50,000 - \$100,000. Based on this estimate and other information in change documents, MassHighway authorized DeLeuw to begin this work prior to negotiations. At the time of negotiations, B/PB had adjusted its estimate to \$144,282 for the extra work. DeLeuw proposed a cost of \$470,388. At the conclusion of negotiations, the cost was \$432,989 and included an "Allowance for Indeterminates," which was described in the negotiation record as:

future changes . . . including any physical changes to the roadway, response plans and cautionary messages. **B/PB determined these changes to be imminent and would likely change multiple times before completion of the final roadway.** Therefor(e) this allowance would eliminate the need for any future PCN's to complete this work. (Emphasis added.)

This "allowance" was roughly 11 percent of the total change cost. This item, not included in change documents presented to MassHighway, violated B/PB's own procedures for adding work to a contract.

Finding 2: DeLeuw's slippage in scheduled design submissions delayed the first IPCS construction package by at least a year.

In July 1990, the RFP for the IPCS design work called for the winning firm to prepare two construction packages: one for the I-90 portion (C22A1), including the harbor tunnel

and the other for the I-93 portion of the CA/T Project (C22A2), including the Central Artery.³ According to its contract with MassHighway, DeLeuw was to complete the design in stages. The final design product would be the package of plans, specifications, and estimates (PS&E) for the IPCS. The PS&E is a central element in the construction bid package. Contractors competing for the IPCS contract would base their bids on the PS&E. The construction work could not be advertised until the PS&E was completed.

- DeLeuw failed to produce a complete PS&E for the first IPCS design package (C22A1); nonetheless, MassHighway advertised and awarded this design package based on DeLeuw's incomplete PS&E, with the intention of modifying the construction contract at a later date.

According to B/PB staff interviewed, the 75 percent design was "actually more like 55 percent." DeLeuw's 100 percent design, submitted on November 16, 1992 -- 134 days late -- "was actually at 85 percent" according to B/PB staff. B/PB staff asserted that the Project presented DeLeuw with 900 comments and instructions to work on the "top ones only." Subsequently DeLeuw assigned a new project manager to the CA/T Project and DeLeuw's performance improved, according to B/PB staff.

³Four additional construction packages with an estimated value of \$11.9 million have been added to the IPCS design. DeLeuw's contract has been modified to include the design work for these packages.

B/PB staff stated that in response to complaints from B/PB, the president of DeLeuw made two trips to Boston to address the situation. B/PB staff explained that after the first trip a schedule recovery plan was developed. Six weeks into the plan, progress slipped and the president of DeLeuw was called to Boston again. B/PB staff stated that because of this poor performance, MassHighway temporarily held back DeLeuw's fee.

According to the terms of DeLeuw's contract, the PS&E for C22A1 was due on September 4, 1992. DeLeuw missed the deadline and submitted the PS&E seven months later, on April 19, 1993. B/PB staff told this Office that DeLeuw's design submittal did not incorporate MassHighway's earlier comments so B/PB returned the incomplete submittal to DeLeuw. According to documents produced by B/PB, DeLeuw resubmitted the PS&E on August 2, 1993 -- 330 days behind schedule.

Documents reviewed by this Office revealed that, in B/PB's view, the PS&E submittal was still not complete. Several design items for the PS&E needed more work and were still not, by February 1994, included in the PS&E. According to change documents for DeLeuw's contract prepared by B/PB for MassHighway, these items will be added to the PS&E by addendum.

In May 1994 correspondence to this Office, MassHighway described these design items as "minor" revisions. To date, the items not included in the bid package include: radio system design changes; cabinet mounting adapter redesign; redo the IPCS reliability/availability analysis; redesign of IPCS additional point types for pumping stations; preparation of roll plans; vehicle loop detector testing; design of an external agency interface with the IPCS operations control center; incorporation of reference markers; design of a temporary control center; modification of the CA/T Fire Detection system; and design of a component identification program. B/PB estimated these items will add between \$1.2 and

\$1.6 million in design costs to DeLeuw's contract and between \$920,000 and \$1 million to the construction costs of the C22A1 package.

Despite the incomplete design, MassHighway put the C22A1 construction package out to bid in September 1993. B/PB estimated the contract value at \$85.6 million. The contract was awarded in January 1994 to the lowest of five bidders. Bids ranged from \$51.6 million to \$63.5 million, well under B/PB's estimate.

According to change documents presented to MassHighway, B/PB plans to modify the newly awarded C22A1 construction contract at a later date. The work added to the contract by change order will not be competitively bid. The contractor will have no incentive to provide the best price and costs to monitor the work will be higher.

Finding 3: Despite evidence of DeLeuw's inability to meet its contractual obligations, poor performance, and contract violations, B/PB did not initiate action adequate to correct DeLeuw's staffing and performance problems.

In its winning proposal to MassHighway, DeLeuw described the resources and specific individuals it would use to successfully complete the IPCS design. DeLeuw's contract contained the following provisions:

- CONSULTANT'S Project Manager and other Key personnel with major areas of responsibility for the SERVICES must be assigned full time to this local office. **The office must have the capability of providing immediate response to Contract issues in all categories of the SERVICES through its resident, local office personnel.** (Bold emphasis added.)
- Prior to the beginning of the SERVICES, the CONSULTANT shall submit the names, titles, and actual salary rates of all personnel to be assigned to the SERVICES. . . The CONSULTANT also **represents that the**

individuals named . . . to this Contract are its full-time employees, and subject to death, sickness, termination, or retirement, will be assigned to the SERVICES to be performed under this Contract. The CONSULTANT shall obtain the DEPARTMENT'S prior written approval before it seeks to replace any of its key personnel for reasons other than death, sickness, termination, or retirement. (Bold emphasis added.)

- Prior written approval of the Department for the change in supervisory personnel must be received by the CONSULTANT.

DeLeuw, in violation of its contract with MassHighway, did not have the staff required to produce the IPCS design and instead hired another firm to fulfill its contractual obligations.

MassHighway authorized DeLeuw to begin work through a notice to proceed (NTP), issued on June 11, 1991. DeLeuw did not have the staff necessary to produce the products which were due within 30 days. Documents provided to this Office by MassHighway state that DeLeuw attributed the shortage of staff to the need to reassign employees to other projects while waiting for the NTP. When the NTP was issued, DeLeuw hired C. T. Main to produce the required contract deliverables.

This Office's review has disclosed that three DeLeuw employees, touted in DeLeuw's proposal and contract as **three of ten key personnel, were reassigned by DeLeuw**. These key employees who were promised but not provided on a full time basis, included the Communications Designer, Control Center Manager, and IPCS Design (Manager). B/PB staff stated that these DeLeuw employees were replaced with local professionals.

In May 1994, MassHighway staff stated to this Office that the Project contributed to DeLeuw's staffing problems because of the delay from the time of negotiations

in December 1990 to the NTP in June 1991. Nevertheless, DeLeuw signed its contract with MassHighway in April 1991 and agreed to its terms, including providing these specific individuals. By reassigning staff to other projects and hiring C.T. Main without first obtaining permission, DeLeuw violated several contract requirements listed below in boldface type:

- **Full-time employees on the CA/T Project:** The employees who were reassigned were part-time.
- **Employees located at DeLeuw's Boston Office:** These reassigned employees commuted to Boston on a weekly basis.⁴
- **Written approval from MassHighway prior to reassigning these employees:** No written approval was given.
- **Submit staffing lists to MassHighway prior to the NTP:** DeLeuw submitted staffing lists after the NTP.
- **Written approval from MassHighway prior to subcontracting any services:** No *prior* written approval was given.

B/PB approved DeLeuw's employee roster in December 1991 -- nine months after DeLeuw's contract was executed. B/PB's failure, in this instance, to hold DeLeuw accountable to the contract began a pattern of accommodating DeLeuw's staffing problems by recommending shifting monies within accounts in DeLeuw's contract to pay for services provided by other firms.

⁴Travel expenses in the amount of \$26,358.42 for these three employees were paid from the travel budget within DeLeuw's contract with MassHighway. In November 1992 DeLeuw requested **an additional \$218,721** for travel. DeLeuw provided three reasons for requiring additional funds: 1) the amount of relocation money agreed to by DeLeuw in the contract was not realistic; 2) out-of-state personnel traveling home every weekend had depleted the travel budget; and 3) the three key personnel listed in the contract were reassigned resulting in unanticipated travel expenses. This Office will review this matter.

B/PB did not take adequate action to correct DeLeuw's staffing problems.

B/PB managers stated in interviews with this Office that they addressed DeLeuw's staffing problems. B/PB also stated that several workshops, meetings, recovery plans, and "thousands of hours of the project staff time" have been dedicated to resolving DeLeuw's staffing and performance problems. Documents revealed instances where B/PB did inform DeLeuw that certain employees were not "appropriate" or qualified, but B/PB did not prevent DeLeuw from assigning at least three such employees to the Project:

- On July 9, 1991, B/PB informed DeLeuw that the Senior System Engineer it had chosen "does not appear appropriate." However, on July 30, 1991, B/PB informed DeLeuw that they "would raise no further objections" to the employee being assigned. B/PB further stated: "(A)llowing you to proceed with this action does not indicate we are in agreement with your selection."
- On August 3, 1992, B/PB reiterated concerns about DeLeuw's newly appointed Project Manager: "While we still have doubts about his suitability for this role, we will work with him to move the project forward."
- In the same August 3, 1992 letter to DeLeuw, B/PB stated its support for DeLeuw's choice of a Systems Integrator and stated "we see this position as second in importance only to the project manager." This position of "importance" was filled by a part-time employee, once again contravening the terms of the contract between DeLeuw and MassHighway. This Office has not been provided with any documents that indicate B/PB informed DeLeuw in writing of this contract violation.

Documents also showed that B/PB requested that DeLeuw replace its Project Manager in February 1992. Under the terms of DeLeuw's contract, B/PB had the option of insisting that this action be taken. B/PB did not do so until five more months of problems passed. B/PB informed DeLeuw in July 1992 that it could either replace the Project Manager voluntarily or it would be directed to do so under the terms of the contract. In August 1992, DeLeuw replaced its Project Manager.

It was not until May 1993, two years into this troubled contract, that MassHighway withheld DeLeuw's fee. Apparently, this action had little impact. For example, in July 1993, B/PB was still extremely dissatisfied with DeLeuw's design work on the fire and security system. In a letter to DeLeuw, B/PB stated:

Confirming our previous discussions on this subject, we believe that (DeLeuw) staff has inadequate experience to perform the fire and security systems design and that additional staff should be assigned immediately to these critical design areas. The product received to date demonstrates inadequate staff has been assigned to the fire and security system design. Our review comments have identified numerous serious design deficiencies in these areas that still remain unresolved as of the PS & E submittal. . . . Comment review meetings as recent as June 29, 1993 indicate that this problem still exists. (DeLeuw) should proceed to rectify this critical deficiency immediately.

On October 25, 1993, two and one-half years into the contract, B/PB informed DeLeuw:

You are required to have adequate staff to support both coordination work and the submittal dates agreed to. If you do not have adequate staff to support the Project, you need to obtain the additional staff immediately.

B/PB explored the possibility of inviting proposals from other firms to design the C22A2 construction package; this second design package is three years behind schedule.

According to MassHighway staff, DeLeuw's design work for the C22A2 construction package was halted at 35 percent due to extreme alignment changes to the CA/T Project. These included the anticipated early opening of the third harbor tunnel and extensive redesign issues related to the Charles River crossing, CANA (Central Artery/North Area), Dewey Square Tunnel, Fort Point Channel crossing, South Bay Interchange and new requirements for the use of high occupancy vehicles lanes in South Boston. As a result of this stoppage, the I-93 portion of the IPCS design PS&E and the construction bid opening date scheduled for 1993, are now delayed to 1996, over three years behind schedule.

In response to halting the C22A2 design work, the need for extensive design changes, and the proposed extension of DeLeuw's contract by about four years, B/PB explored the possibility of inviting proposals from other design firms. In early 1993, B/PB managers documented their concerns about DeLeuw's past and future performance on the IPCS design:

- There are several reasons that we should review whether the package should be sole sourced. . . . It is a lot of money, and maybe other design firms would bring something to the party that would make up for the learning curve that we would have to suffer (and pay for). . . (DeLeuw) has not revealed strength at all positions. A new (section design consultant) may bring a stronger, local stable of engineers.
- With a change of this magnitude, we must ask ourselves if we should open the design up for competitive bidding. We have reviewed this question extensively . . . Our conclusion is that the work should be sole sourced to (DeLeuw), as long as we remain confident in their ability to perform. (Emphasis in original text.)

B/PB performed two analyses to determine if they should invite proposals from other firms. The first was an evaluation of DeLeuw versus another firm and the second was an analysis of design scheduling changes. Based on these analyses, B/PB concluded: "Our analysis shows that a competitive bid process will impact the project schedule, with no predictable material benefit in cost or quality." The decision not to open this work up to other firms is inexplicable in light of B/PB's account of DeLeuw's poor performance and the problems reported in this finding.

In early February 1994, MassHighway directed B/PB to reevaluate the possibility of reprocurring IPCS design services. B/PB staff informed this Office that the reevaluation was requested because of DeLeuw's continued poor performance and the need to restructure the C22A2 design package. In June 1994 MassHighway requested technical assistance from this Office in evaluating B/PB's recommendation to procure and its proposal for implementation.

B/PB staff briefed this Office on a proposal to delete the C22A2 portion of the IPCS from DeLeuw's contract on June 8, 1994. B/PB proposed that DeLeuw complete its work on C22A1, the toll system and other design items (C22A4-7), and provide construction phase services. In the meantime, B/PB over the next year would restructure the design package and coordinate certain mainline section design consultant activities while a new designer is being selected. B/PB stated it would charge an additional \$14 million to implement this proposal.

This Office notified the Project Director on July 6, 1994 that it did not object to reprocurring design services. However, this Office urged the Project Director to: ensure B/PB would not be paid an additional fee for services already in its existing contract with MassHighway; define clearly B/PB's new scope of work; define the new design package before readvertising; specify and monitor DeLeuw's responsibilities, schedule and costs; and delineate the roles and responsibilities of MassHighway staff, B/PB, DeLeuw, and the new section design consultant.

On July 15, 1994, MassHighway notified this Office that it intended to reprocore the C22A2 design package.

Finding 4: B/PB did not adequately document the extent of the problems with the DeLeuw contract and the implications for the Project.

This Office requested that MassHighway provide any documents that would show B/PB's efforts to communicate to MassHighway the personnel and performance problems of DeLeuw

and/or its subconsultants. MassHighway's response, prepared by B/PB, stated:

The B/PB Project Engineer has had informal, unminuted meetings with the (MassHighway) on the status of the DO22A contract on an as needed basis. Meetings were held anytime B/PB identified a significant performance issue, and B/PB held additional meetings to keep (MassHighway) informed of progress in resolving identified problems. . . . B/PB enhanced the Department's understanding of some of the performance problems when B/PB presented its argument for denying (DeLeuw's) claim in PCN 17.

MassHighway provided this Office with nine letters, handwritten notes by a B/PB manager, and handwritten information on a calculation sheet as evidence of B/PB's communications to MassHighway. Of the nine letters, four were *from* MassHighway and one was from B/PB in response to a letter from MassHighway. The four remaining letters from B/PB to DeLeuw were copied to MassHighway during a three and one-half week period beginning October 25, 1993. This Office reviewed hundreds of letters, meeting minutes and other documents B/PB generated pertaining to the DeLeuw contract. Of all the documents provided to this Office, only these four letters from B/PB to DeLeuw appear to have been provided to MassHighway.

This Office has reviewed correspondence and other documents from B/PB to DeLeuw that discuss the consequences of DeLeuw's poor performance, staffing problems and late design submittals. These consequences include potential public safety problems, impact to other Project contracts and the "potential for delaying tunnel opening planned for October 1995." Not one of these critical documents was copied to MassHighway.

MassHighway indicated to this Office that it was adequately informed about DeLeuw's problems. Documentation to MassHighway is clearly warranted in this case and is a requirement of the Project's Management Plan. To the extent that B/PB fails to adequately document performance deficiencies, it impedes MassHighway's ability to pursue cost recovery and other legal remedies. Moreover, the absence of documentation reduces MassHighway's ability to determine B/PB's culpability in such matters.

Finding 5: B/PB misused terms and inaccurately reported costs in documents it prepared to exempt work added to DeLeuw's contract from State regulations requiring competitive procurement of services.

The CA/T Project Director requested and received two waivers of State regulations pertaining to service contract amendments, (801 CMR 20.09 (1) (b)). These regulations state:

Major modifications or amendments to a service contract as defined in this section require a new competitive procurement. However, unforeseen circumstances may arise which necessitate a major change or amendment in which a new competitive procurement may not be in the best interests of the Commonwealth. In these circumstances, the Secretary or delegatee, or Non-Executive Office Department Head may request a waiver of the procurement procedures and the approval of the proposed amendment or modification by requesting a waiver as provided in 801 CMR 20.11. . . . (Emphasis added.)

These regulations are clear: a major modification to a contract requires a new competitive procurement. This requirement can only be waived when "unforeseen circumstances" arise and create a need for a service for which a new procurement may not be in the best interest of the Commonwealth. B/PB drafted waiver requests and submitted the requests for MassHighway's approval. This Office's review of two significant requests to modify the IPCS contract revealed serious flaws.

Waiver Request #1: \$2 million in additional services.

On December 15, 1992, the CA/T Project Director requested approval to waive the requirement for competition in the award of \$2 million in additional work to DeLeuw. The CA/T Project Director stated that the waiver was requested:

to fund the additional services . . . that result from **unforeseen circumstances** and for which a new procurement would not be in the best interests of the Commonwealth. (Emphasis added.)

The CA/T Project Director listed and described the four additional design services that the \$2 million would fund: Interim Operations Control Center (IOCC); Project Roadway Striping; Overheight Vehicle Attenuator (OHVA); and Component Identification Program (CIP).

B/PB had foreseen the need for three of these services. One need go no further than the waiver request itself to conclude that these changes were not "unforeseen" circumstances as the documents inaccurately state. The written waiver request included the following statements:

Interim Operations Control Center (IOCC)

"The MHD made a commitment to provide the IOCC capability as part of the positive response to commitments made in the Final Supplemental Environmental Impact Report (November 1990). In May 1991, it was agreed that the final design of the IOCC as described in the preliminary design report prepared by the MDPW, would be done under DO22A.⁵ However, this **decision was not in time** to be included when the DO22A contract was negotiated in December 1990." (Emphasis added.)

Project Roadway Striping

"Originally, the pavement markings design was included in each design contract for the specific area, and **was never included** as part of the original Scope of Services for this Contract." (Emphasis added.)

Overheight Vehicle Attenuators (OHVAs)

"The DO22A SDC's scope includes determining the appropriate location of the OHVAs, however the responsibility to design the OHVA **was not included in any SDC's scope**. Therefore, the design of the OHVAs could not be included when the DO22A contract was negotiated." (Emphasis added.)

Clearly, despite the CA/T Project Director's claim that the circumstances were unforeseen, the need for these three design services was known prior to formation of the IPCS design package.

Three of the services had already been added to DeLeuw's contract before the waiver was requested in December 1992. The regulations require prior approval of any waiver of competition for a "proposed" contract amendment, and the waiver prepared by B/PB characterized the four services as "Proposed Additional

⁵DO22A is the design section of the Project that encompasses the IPCS.

Services." In fact, three of the four services had already been added to DeLeuw's contract, beginning with Roadway Striping in August 1992, IOCC in September 1992, and OHVA just four days prior to the request to waive these regulations. To suggest that the services were merely "proposed" is not only inaccurate, it is misleading. The term "proposed" suggests the existence of a choice as to whether the consultant can move forward. For these services, there was no choice. DeLeuw was already doing the work, and its contract was already amended.

The waiver request substantially overstated the costs of these four services.⁶ The CA/T Project Director asked for nearly \$900,000 more than the total anticipated cost of these services. The waiver sought approval to add \$2 million to the contract to fund the four services. The cost for three of the four services (IOCC, Project Roadway Striping, OHVA) had already been negotiated and added to the contract in the amount of \$1,019,338. The estimated cost for the CIP Program work was \$50,000 to \$100,000. Even if the cost of the CIP had been \$100,000, the sum for the four services would total only \$1,119,338:

Interim Operations Control Center	\$591,821
Project Roadway Striping	\$129,388
Overheight Vehicle Attenuator	\$298,129
Component Identification Pgm.(CIP)	<u>\$100,000 (high estimate)</u>
TOTAL	<u>\$1,119,338</u>

The waiver request provided no explanation as to why the amount requested (\$2,000,000) was nearly double the maximum amount (\$1,119,338) that would be needed, according to B/PB's cost estimate, to cover the cost of the four services. As a consequence, DeLeuw's Contingency Fund was increased by \$2 million,

⁶This Office's review revealed that the costs for services contained in 44 percent of all CA/T Project waivers have been overstated.

even though the purpose for only half the increase (\$1.1 million) was revealed.

Waiver Request #2: \$7 million in additional services.

On August 9, 1993, the CA/T Project Director requested permission for a second waiver. Again, B/PB prepared the documents. This waiver also sought to increase the maximum obligation of DeLeuw's contract without the benefit of competition by \$7 million dollars.

As in the earlier waiver request, the CA/T Project Director signed a document which stated that "unforeseen circumstances" had led to the need for 15 "proposed additional services" which would be funded with this \$7 million increase.

Most of these 15 services were not "*proposed additional services*" as described in the waiver. In fact, DeLeuw had already been authorized by the CA/T Project Director to begin work on at least nine of these 15 services before this waiver was approved. As in waiver #1 discussed earlier in this report, MassHighway had already instructed DeLeuw to begin work and modified the contract.

Most of these 15 services required DeLeuw to redesign, remove, revise, or relocate work that had already been performed. Examples include changes to software, removal of design for loop detectors, sign revisions, and redesign of a control system for the pump water level and the hydrocarbon detection system.

The waiver request substantially overstated the amount FHWA will pay. The waiver request, drafted by B/PB and signed by the CA/T Project Director asserted:

The Federal Highway Administration concurs with the Project's recommendation not to reprocure and will participate in funding \$5,310,000 of the \$7,000,000 Contract Amendment.

However, documents provided to this Office show that FHWA had declined to fund \$3,251,726 of the contract changes listed in this waiver request. DeLeuw's \$51,726 claim for PCN preparation was rejected by FHWA on May 14, 1993, nearly three months *prior* to the waiver request; and FHWA informed the CA/T Project Director six weeks *prior* to the waiver request that it would not fund the \$3,200,000 restructuring of C22A2 and the extension of DeLeuw's contract. Of the \$7 million dollars requested for the services in this waiver, FHWA had informed MassHighway that it would participate in funding \$3.7 million, not the \$5.3 million claimed in the waiver.

The CA/T Project Director inaccurately reported the cost of 11 of these 15 services.

In this waiver request, the CA/T Project Director provided a cost estimate for each of these 15 services, which totalled between \$6,537,868 - \$7,007,868. This Office's examination disclosed that the cost estimates in the waiver were significantly higher for 11 of the 15 services than the approved PCN costs. Documents show that 11 services, approved at an estimated cost between \$3,716,000 - \$4,115,000, were reported in the waiver to cost an estimated \$5,705,726 - \$6,125,726, about two million dollars more than the approved amounts. For instance, the design work for the temporary control center had an approved cost of between \$50,000 - \$100,000. However, it was reported in the waiver request to have an estimated cost between \$250,000 - \$300,000.

Both waiver requests, prepared by B/PB and signed by the CA/T Project Director, were approved and signed by the CA/T Director of Design, the Chief Legal Counsel, the Commissioner of MassHighway and the Secretary of the Executive Office of Transportation and Construction (EOTC). The increase in contract value

was also approved by the Massachusetts Highway Commission. Documents provided to this Office contain no evidence that the accuracy of the waivers was ever questioned by any state official.

CONCLUSIONS AND RECOMMENDATIONS

B/PB has implemented an intricate schedule for planning, designing and constructing the CA/T Project sometimes referred to as "fast-tracking." Preliminary design, final design and construction are underway concurrently on various sections of the Project. This approach requires a highly sophisticated planning and scheduling capacity. The goal is to keep the CA/T Project on schedule; a risk is that adequate planning and cost control will be sacrificed, and that schedules may slip and costs may increase substantially. The IPCS design contract is exhibiting the risks inherent in "fast-tracking": inadequate planning and cost-control.

The IPCS is especially vulnerable to the risks inherent in this fast-tracking method because it is a project-wide design that impacts a number of other design and construction packages. In August 1993, the CA/T Project Director reported to MassHighway's Commissioner that the IPCS design impacted 19 major construction contracts with an estimated total value of \$1.81 billion. Of these 19 construction contracts, seven were active and 12 were under design and could not be put out to bid until the IPCS design was completed. It is precisely these schedule and cost impacts on other Project contracts that dictate a well-developed preliminary design prior to advertising. This did not occur. Instead, B/PB excluded needed services from the advertised IPCS design package with the intention of adding the work at a later date. This added design work along with redesign services accounts for two-thirds of DeLeuw's contract modifications.

This Office does not know the extent to which responsibility for delay of these design packages should be apportioned among B/PB, DeLeuw, and MassHighway. This Office has concluded that MassHighway did not receive the level of service it contracted for and should expect from B/PB and DeLeuw. B/PB

performed poorly as contract administrator, DeLeuw failed to perform adequately, and MassHighway failed to monitor adequately B/PB's performance.

MassHighway's failure results in part from the untenable situation it has created for itself. At the time of this review, MassHighway employed only about 40 staff members to oversee B/PB's efforts to manage the Project through approximately 1,200 administrative, technical and professional staff. Of these 1,200, about 29 were so-called "seconded" positions -- that is, staff paid by B/PB but assigned to MassHighway. Even in this arrangement, MassHighway signals its dependence on B/PB.

MassHighway's dependence on B/PB is illustrated in the instances where Project management filed for waivers from services regulations using inaccurate and misleading information. B/PB controls the information and drafts the requests that are relied upon by Project management, MassHighway's Commissioner and the Secretary of EOTC.

Keeping the Project on schedule has often been MassHighway's justification for awarding major contract modifications to DeLeuw and others without competition. The CA/T Project Director has stated in several documents that for every day the IPCS design is delayed there is a corresponding delay to major construction contracts. In 1992, the CA/T Project Director stated that 16 major construction contracts, with a total construction value of \$1.87 billion, would be delayed if the IPCS design were delayed. He estimated the cost impact of this delay to be \$310,000 per day. In August 1993, the CA/T Project Director stated that if delayed, the IPCS design would delay 19 major construction contracts and the cost impact would be \$235,000 per day. Using MassHighway's formula, DeLeuw's failure to deliver the work it was hired to perform in a timely manner has already cost the Project between \$77,550,000 - \$102,300,000.

The total cost for designing the IPCS will escalate further with MassHighway's decision to reprocure the C22A2 design package. The time required for this reprocurement process, coordination between the parties involved, and management of this effort will be costly. In addition, the delay will impact several other design packages at a cost that has yet to be determined by MassHighway.

MassHighway must take steps to increase its control over the Project and to demonstrate a commitment to holding firms -- including B/PB -- accountable for meeting contract terms. The Inspector General recommends the following:

1. Define the new C22A2 design package -- and the qualifications and performance requirements -- before readvertising. Make use of the hard lessons learned since DeLeuw was first hired over three years ago.
 - a. Specify and monitor DeLeuw's remaining responsibilities (including its role during the construction phase), schedule and price.
 - b. Delineate the roles and responsibilities of MassHighway staff, B/PB, DeLeuw and the new design firm. Hold each party accountable. Do not pay B/PB an additional fee for services already included in the scope of its contract with MassHighway.
 - c. Define clearly B/PB's new scope of work. Direct B/PB to prepare a schedule and price for any new work -- that is, work not now included in B/PB's contract.
2. Ensure that the remaining Project construction bid packages are complete before they are put out to bid. Stop using contract modifications and change orders to make up for incomplete preliminary and final design work.

3. Stop the misuse of terms and inaccurate costs reported by B/PB in documents that seek waivers for MassHighway from State regulations requiring competitive procurement of services. Ensure that, at a minimum, all waiver documents accurately describe services, estimate costs and include up-to-date FHWA funding estimates. Stop instructing DeLeuw to begin work and modifying its contract before applying for waivers. MassHighway has requested, and this Office is providing, technical assistance in addressing this problem.
4. Strengthen MassHighway's ability to monitor B/PB's performance by increasing its staffing levels for contract administrators and technical professionals.
5. Institute contract administration policies to flag any contract that shows cost increases that individually total five percent and cumulatively total 10 percent of the original contract value. Contracts exceeding this threshold should be more closely monitored by MassHighway personnel. Require B/PB to account for the increase in cost or contract duration.

MassHighway has selected a management consultant to examine its contractual relationship with B/PB. MassHighway should ensure that the management consultant assesses the extent to which B/PB's poor performance in managing the DeLeuw contract is evident on other contracts and evaluates B/PB's multifaceted and sometimes conflicting responsibilities as the Project manager.

APPENDIX A: RESPONSE TO THE DRAFT REPORT

On September 14, 1994, the Inspector General sent a confidential draft of this report to Project Director Peter M. Zuk and Secretary of Transportation and Construction James J. Kerasiotes and requested a formal response. After the Inspector General approved two extensions for the Project to transmit its written response, Project Director Zuk responded in a letter dated October 19, 1994. The Project Director's letter, the Project's response to specific findings, and a list of documents transmitted with the response are included in this Appendix.

In all but a few cases the Project's responses to individual findings simply explain its actions. In a few instances, the Project questions the accuracy of the report's findings. After careful re-examination, this Office concluded that these findings as written were fully supported by documentation. Four of these areas merit comment:

- Project's Response #1: DeLeuw's contract amount. This Office acknowledges that with the recent cancellation of \$8.1 million in extra services and the removal of the CO22A2 design package, DeLeuw's contract value is now lower than projected at the time of this review. Nonetheless, the total cost to design the IPCS is likely to exceed \$28.5 million when MassHighway completes negotiations with DeLeuw, B/PB, and the new IPCS design firm.
- Project's Response #2: Cost caps placed on charges for extra services. The Project's own records contradict its account of the cost cap issue. Project documents show that in November 1993, the B/PB Authorized Representative for the DeLeuw contract was directed by B/PB's Deputy Project Manager for Engineering to ensure that caps were placed on charges for extra services.
- Project's Response #3: Overheight Vehicle Attenuators (OHVA). The Project states that the responsibility to site OHVA was included in DeLeuw's original contract as evidenced by two directive drawings that were listed in the scope of services, Section 6.3, and "therefore are part of the scope." We disagree. Section 6.3 merely lists 93 directive drawings and nine standard drawings. Moreover, DeLeuw's contract was modified, at a cost of \$298,129, for OHVA services including the task to verify the attenuator's locations. If this task was included in the original scope, as the Project has incorrectly argued, then DeLeuw would have been paid twice for the same task - once under the original contract and again, through a contract modification.
- Project Response #7: Status of DeLeuw employees. The Project claims that the three positions were filled by full-time DeLeuw employees. They may be full-time DeLeuw employees. However, they were assigned *part-time* to the CA/T Project. This fact was verified in Project documents and acknowledged in writing by Project staff in June 1994.



Massachusetts Highway Department
Central Artery/Tunnel

RECEIVED

October 19, 1994

OCT 19 1994

Wendy Haynes
Deputy Inspector General
for Contract Audit and Review
Office of Inspector General
One Ashburton Place
Boston, MA 02108

OFFICE OF
INSPECTOR GENERAL

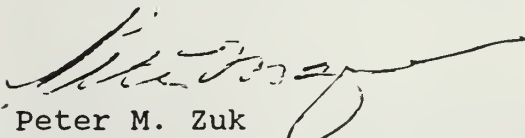
Dear Ms. Haynes:

Enclosed please find the Project's response prepared by the Massachusetts Highway Department and Bechtel/Parsons Brinckerhoff to the final draft report on the Integrated Project Controls System (IPCS) contract. The Project appreciates your office's careful attention to this matter.

As you know, the Project is in the unique position to utilize the lessons learned from the original contract on the remaining portions that are to be reprocured. I look forward to working with you on this effort through our existing technical assistance agreement.

Thank you for providing the Project with the opportunity to respond to the draft report. It is my understanding that your office plans to release the final report in late November.

Sincerely,


Peter M. Zuk
Project Director

AD 2.4.2
094-3398

**Response to Massachusetts Office of the Inspector General
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This response addresses all findings and recommendations as well as some additional specific points contained in the report.

Point #1:

"Finding 1: DeLeuw's \$10.9 million contract will nearly triple to \$28.5 million."

CA/T Project Response to Point #1:

In our effort to contain costs, the Project periodically updates contract values, to reflect most recent changes. The current value is \$17.5 million, which is the sum of four components: original contract value, contract modifications, all negotiated changes, and B/PB's estimate of the value of non-negotiated changes. (See Attachment 1). Note that PCN-038R1 has been cancelled and no longer appears. PCN-074, a credit, has been added. PCN-074 removes the remaining design work for the original C22A2 construction package. We notified DeLeuw to stop work on C22A2 in B/PB letter L-665, dated July 29, 1994, and that any further work must be authorized in writing. (See Attachment 2). PCN-074 has been approved by the Department. As a result, the final design work for the original C22A2 construction contract will be performed under a separate contract, D022B.

The changes to the D022A contract can be broken down into eight major categories: (1) design, (2) agency requests, (3) schedule impacts, (4) scope, (5) claims, (6) projectwide requirements, (7) administrative adjustments, see Attachment 3. Of these eight categories, four account for approximately 87% of the total dollar value: design (34.8%), agency requests (20.2%), schedule impacts (18.6%), and scope (15.4%).

Point #2:

"B/PB did not, as the Highway Department claimed, place cost caps on changes for all services DeLeuw performed prior to contract modifications."

CA/T Response to Point #2:

It appears that the Office of the Inspector General misinterpreted our statement in May 1994 on spending caps being placed on additional work DeLeuw performed before the contract was modified.

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The intent of our statement was to note that caps had been put in place for all work still underway in May 1994. This was for the four services identified in B/PB letter L-614, see Attachment 4.

Since that time, Department procedures have been modified such that a cost cap is required for all work authorized to proceed before the contract has been modified. (See Attachment 5, section 2.3 for a description of the "cost not to exceed cap").

Point #3:

"B/PB included inaccurate statements in [PCN-009] change documents it prepared for the Highway Department."

CA/T Response to Point #3:

There were no inaccurate statements in the change documents for PCN-009 that would affect approval of this change. The report cites two instances of perceived inaccuracies. The first instance that "DeLeuw's contract did not contain the responsibility to locate OHVA", is inaccurate. Overheight Vehicle Attenuators (OHVA's) are shown on Directive Drawings DD-T-312 and DD-T-634 which are listed in Attachment B, Scope of Services, Section 6.3 and therefore are part of the Scope.

The second instance does identify an error, but the error has no bearing on determining the merit of the change. A statement that "a sole source justification is attached" was included in error in the PCN-009. However, since no sole source justification was required for PCN-009, this error is irrelevant to judging the merits of this change. As the report notes, B/PB has accepted responsibility for this error; however, the implication of the report that B/PB should have developed a sole source justification to allow proper evaluation of this PCN is inaccurate.

Point #4:

"B/PB misrepresented the purpose of the \$432,989 contract change for Traffic Surveillance and Control Systems (TSCS) on the South Boston Bypass/Haul Road."

CA/T Response to Point #4:

This statement is inaccurate and overlooks key statements in the PCN-022 approval document, see Attachment 6. The last paragraph of the PCN-022 description of change clearly states "Modification of early opening and final build TSCS design in contract areas, C01A3,

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C04A2, and C13A1 to remove Lane Use Signals and Variable Speed Limit Signs associated with the South Boston Bypass/Haul Road. Design modification to the Variable Message Signs in these contract areas to remove them from viaduct mounted locations and place them at logical decision points." B/PB did accurately represent the purpose of PCN-022.

Point #5:

"Finding 2: DeLeuw's slippage in scheduled design submissions delayed the first IPCS construction package by at least a year."

CA/T Response to Point #5:

The report is correct in that milestone slippage did occur. This was due to several reasons including: the addition of work, DeLeuw's performance problems, and loss of key staff due to late NTP; all of which impacted the schedule.

We recognized DeLeuw's performance problems and took action in a timely fashion to: preserve the rights of the Commonwealth under the contract, maintain design integrity, advise DeLeuw of its failure to perform, and assist DeLeuw in improving their performance. See Attachment 7 for a list of 51 documents in which we identified DeLeuw performance and staffing problems. See Attachment 8 for a partial listing of 13 workshops where B/PB assisted DeLeuw in resolving performance problems during the period March 1992 through January 1993.

Point #6:

"Finding 3: Despite evidence of DeLeuw's inability to meet its contractual obligations, poor performance, and contract violations, B/PB did not initiate adequate action to correct DeLeuw's staffing and performance problems."

CA/T Response to Point #6:

While DeLeuw has struggled to correct their staffing and performance problems, we believe the Department and B/PB have been proactive in this matter, (See response to point number 7 for additional information). In February 1992, just eight months after NTP, we requested that DeLeuw replace their project manager. DeLeuw instead implemented a recovery plan for their next

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submittal. Review meetings were held every two weeks from mid February 1992 to April 1992 to assess DeLeuw's progress on the C22A1 75% submittal. It was determined that inadequate improvement had been made, and the Department agreed with B/PB's recommendation that DeLeuw must replace their project manager. In July 1992, B/PB informed DeLeuw that if they did not replace their project manager voluntarily, the Department would direct them to do so under provisions of the Contract. DeLeuw then replaced their project manager. Subsequently, B/PB held several meetings with DeLeuw senior management where schedule and staffing problems were discussed, and DeLeuw made commitments to improve performance. (See Attachment 9 for a list and description of seven Senior Management Meetings that occurred between February 1992 and October 1993).

During March 1992 through January 1993, B/PB conducted workshops and held several review meetings to resolve technical deficiencies in DeLeuw's submittals. This effort required thousands of hours of the project staff time. Our actions were successful in having DeLeuw generate a set of well-defined specifications for C22A1, the first and most complex IPCS contract. The close range of received bids supports our position that the specifications were well-defined. (See Attachment 10).

In April 1993, the Department asked B/PB to review options concerning DeLeuw's continued role on the Project and concluded that there was more cost and schedule exposure to the Commonwealth if we replaced DeLeuw at that time.

Point #7:

"By reassigning staff to other projects and hiring C.T. Main without first obtaining permission, DeLeuw violated several contract requirements.

- Full-time - the employees who were reassigned were part-time.
- Employees located at DeLeuw's Boston Office - these reassigned employees commuted to Boston on a weekly basis.
- Written approval from the Highway Department prior to reassigning these employees - no written approval was given.
- Submit staffing lists to the Highway Department prior to the NTP - DeLeuw submitted staffing lists after the NTP.
- Written approval from the Highway Department prior to subcontracting any services - no written approval was given."

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CA/T Project Response to Point #7:

- The report mistakenly claims that the three positions listed were not filled by full-time DeLeuw employees.
- The problem of DeLeuw not relocating the staff to Boston was addressed with DeLeuw. This was rectified and these positions were filled by resident staff in Boston.
- The report notes that DeLeuw proceeded with staffing changes prior to obtaining formal approval. It is common practice to proceed with the work while the staffing rosters are being reviewed.
- The report is correct; staffing lists were not submitted prior to NTP. The staffing lists were submitted on July 11, 1991 due to the lack of information as to when NTP would be issued. After being informed that there would be a significant but indeterminate delay before an NTP would be issued, DeLeuw delayed submitting the staffing list until the date for issuance of NTP could be reasonably predicted. This was necessary to allow DeLeuw to prepare realistic staffing plans. A firm date for issuance of NTP was not forthcoming prior to the actual issuance itself. This forced DeLeuw to finalize staffing plans after issuance of NTP and delayed their submittal of the staffing list until shortly after issuance of NTP.
- CT Main did receive written approval as a subcontractor, see Attachment 11. As noted above, it is common practice to allow the work to continue while approval is being pursued, particularly when working to meet early deliverable schedules. However, DeLeuw was not permitted to bill for the C.T. Main staff until approval was received. See Attachment 12 for payment exceptions on billing for C.T. Main submitted prior to their approval by the Department.

Point #8:

"Finding 4: B/PB did not adequately document the extent of the problems with the DeLeuw contract and the implications to the Project."

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CA/T Project Response to Point #8:

B/PB kept the Department informed of the problems on this contract since its inception. However, we acknowledge that much of this communication was done orally.

B/PB's D022A Project Engineer's daily appointment schedule indicates that he met with the Department's Projectwide Engineer on eight occasions during the period April 1993 through July 1993 when DeLeuw was having problems complying with its submittal schedule, see Attachment 13. The Project Engineer and Project Engineering Manager held several meetings with the Department's Projectwide Engineer and Design Manager during 1992 to seek their approval to remove DeLeuw's Project Manager. Hence, while B/PB acknowledges the lack of formal correspondence, the MHD was fully informed of the problem.

Previously B/PB did not copy the Department on all correspondence. This was so as not to inundate MHD staff with paperwork. However, B/PB now copies the Department on all correspondence with SDC's, including DeLeuw. See Attachment 14 for a list of B/PB-DeLeuw letters copied to the Department since June 1, 1994.

Point #9:

"Finding 5: B/PB misused terms and inaccurately reported costs in documents it prepared to exempt work added to DeLeuw's contract from State regulations requiring competitive procurement of services."

CA/T Project Response to Point #9:

There appears to be a misunderstanding as to what items are appropriate for the waiver documents.

With regard to legal requirements for waivers, the regulation states that a waiver of 801 CMR 20.09 may be granted "... upon written request of a Department and a showing of special or exceptional circumstances or need ..." (801 CMR 20.11). Additional IPCS design work was justified because of exceptional circumstances. The relevant "exceptional circumstances" are identified in both waivers and follow essentially the same logic.

Waiver Request #1, see Attachment 15, states "the Project has determined pursuing a new competitive procurement of a Section Design Consultant would seriously delay the construction program.... the state procurement process on average requires a

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minimum of 9 months.... Conservatively each day that the completion of the 91395-D022A Contract is delayed, there is a day for day delay to at least sixteen (16) major construction contracts.... Reprocurement of a new consultant to perform these services would result in a greater final cost to the Commonwealth. The current consultant is versed and extremely familiar with the scope of services of this contract, therefore, there is no learning curve and an economy is realized."

The language in Waiver Request #2, see Attachment 16, is the same as Waiver Request #1, because the exceptional circumstances were the same.

Point #10:

"Three of the services had already been added to DeLeuw's contract before the waiver was requested."

CA/T Response to Point #10:

In some cases we issue NTP for changes prior to completing the contract modification process. This is done to initiate the work and minimize delays. This has been necessary due to the decision to keep the contingency figure low.

Point # 11:

"The waiver request substantially overstated the costs of these four services...."

CA/T Response to Point #11:

Costs stated in the waivers are conservative estimates, and the differences between estimated and actual costs are later reconciled. Accordingly, the dollar value(s) stated in the waiver letter typically do not equal the funds requested from the Board of Commissioners for that contract. Waivers generally have conservative estimates to ensure that the actual cost of the work will not exceed the estimates.

The differences noted between the waiver request value and the total approved PCN value are a result of the waivers reflecting up-to-date information on the value of each PCN. In most cases, proposals have been received from the SDC prior to generating the waiver. In addition, scope meetings and negotiations may have

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occurred which adjust the value of the PCNs versus its original estimated range. The waiver reflects the most up-to-date information on the value of each PCN at the time the waiver is written, rather than the original PCN estimate. However, since negotiations may not yet be finalized, the waiver may not reflect the final PCN value.

Point #12:

Recommendation No.1: Define the new C22A2 design package and the qualifications and performance requirements - before readvertising. Make use of the hard lessons learned since DeLeuw was first hired over three years ago.

- a. Specify and monitor DeLeuw's remaining responsibilities (including its role during the construction phase), schedule, and price.
- b. Delineate the roles and responsibilities of Highway Department staff, B/PB, DeLeuw and the new SDC.
- c. Define clearly B/PB's scope of work. Direct B/PB to prepare a schedule and price for new work-that is, work not now included in B/PB's contract."

CA/T Response to Point #12:

This effort is underway. The D022B Request for Qualifications/Proposal (RFQ/P) and subsequent D022B Preliminary Design Report will contain the results of our separate "Lessons Learned" effort. B/PB has developed the first draft of lessons learned, and the results of this effort will be reflected in the draft RFQ/P. Performance requirements will be included in the D022B contract.

- a. The D022A contract, as modified by PCN-074 (which removes the C22A2 work) and all other existing PCNs, specifies DeLeuw's remaining responsibilities, including construction phase services. The modified contract identifies DeLeuw's schedule. The negotiated value for the existing PCNs will modify the contract value to the new price. The Department and B/PB will closely monitor DeLeuw's performance versus the revised contract requirements.

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- b. The roles and responsibilities of the respective parties are as follows:

Highway Department: Unchanged (Oversight, program management, etc.)

B/PB: As described in Work Program 12 and modified by MCN 12-060.

DeLeuw: As defined in D022A contract and modified by PCN-074

New SDC: As defined in the D022B contract.

- c. MCN 12-060 defines the changes to B/PB's scope of work including: support to mainline contracts, preparation of new directive drawings, development of the D022B RFQ/P, SDC selection support to the Department, and a schedule to perform all work. Once MCN 12-060 has been signed, a revised schedule will be developed based on the date of authorization and authorized resources.

Point #13:

"Recommendation No. 2: Ensure that the remaining Project construction bid packages are complete before they are put out to bid. Cease the practice of using contract modifications and change orders to make up for incomplete preliminary and final design work."

CA/T Project Response to Point #13:

We will continue to ensure that project construction packages are as complete as possible consistent with project objectives prior to bid. We believe that delaying procurement of the D022A contract in order to resolve the outstanding preliminary design issues would have resulted in a higher cost to the Commonwealth due to resulting delays on D022A information required by mainline contracts.

It is not the project's practice to use contract modifications and change orders to make up for incomplete preliminary and/or final design work. However, there may be cases where it is in the Commonwealth's best interest to proceed with final design while some aspects of the preliminary design are being refined.

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Point #14:

"Recommendation No. 3: Stop the misuse of terms and inaccurate costs reported by B/PB in documents that seek waivers for the Highway Department from State Regulations requiring competitive procurement of services. Ensure that, at a minimum, all waiver documents accurately describe services, estimate costs and include up-to-date FHWA funding estimates. Cease instructing DeLeuw to begin work and modifying its contract before applying for waivers. The Highway Department has requested, and this Office is providing, technical assistance which should assist in addressing the problem"

CA/T Project Response to Point #14:

While we do not believe the conclusions expressed in this recommendation are accurate, we will continue working with your Office to improve our procedures to ensure that all regulations of the Commonwealth are met.

We do not agree that the costs stated have been inaccurate, see our response to Point #9.

We remain committed to making every effort to include the most accurate information possible in the Waiver Requests. However, there may be instances where it is in the Commonwealth's best interest to commence work with available funds concurrently with seeking waiver approval for additional funds to complete the effort.

Point #15:

"Recommendation No. 4: Strengthen the Highway Department's ability to monitor B/PB's performance by increasing its staffing levels for contract administrators and technical professionals."

CA/T Project Response to Point 15:

B/PB is an extension of MHD's staff. The MHD establishes project policy and makes all project decisions. B/PB's role is to implement the decisions and policy set by the Department. As part of MHD's oversight role, MHD continuously reviews and monitors critical B/PB operations for conformance with policy. In this regard MHD has recently engaged the Peterson-Lemley Group to assess, among other items, whether MHD has sufficient oversight procedures in place for adequately monitoring B/PB's performance.

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Point #16:

"Recommendation No. 5: Institute contract administration policies to flag any contract that shows cost increases which individually equals five percent and cumulatively totals ten percent of the original contract value. Contracts exceeding this threshold should be more closely monitored by Highway Department personnel. B/PB should be required to account for the increase in cost or contract duration."

CA/T Project Response to Point #16:

Cost data on all contracts is provided to the Department on a monthly basis with all variances identified and discussed to ensure full knowledge of contractor status. The project does not limit or highlight the flagging of variances to the percentage numbers identified in the report. This has been project procedure since April 1992.

Point #17:

"Recommendation No. 6: The Highway Department is in the process of selecting a management consultant to examine its contractual relationship with B/PB. The Highway Department should ensure that the management consultant assesses the extent to which B/PB poor performance in managing the DeLeuw contract is occurring on other contracts and evaluates B/PB's multifaceted -- and sometimes conflicting -- responsibilities as the Project Manager."

CA/T Project Response to Point #17:

We disagree with the report's assessment of B/PB's performance on the D022A contract. We also disagree with the report's assessment that B/PB "sometimes" has conflicting responsibilities. B/PB fully understands its role. Further, B/PB has operated within the strict confines of its responsibilities.

B/PB has consistently identified DeLeuw's performance issues in writing to DeLeuw and kept the Department informed of both the issues and B/PB's corrective actions. B/PB proactively pursued resolution of these issues through various means, including: special progress reporting meetings, meetings with DeLeuw senior management, arranging for DeLeuw to replace their first project manager due to insufficient improvement, assisting DeLeuw to understand in detail all requirements for biddable specifications, withholding fee payment, reviewing options for reducing DeLeuw's

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scope of work, and recommending that the remaining design and all construction phase services for the C22A2 contract be removed from the D022A contract. B/PB's lessons learned effort for the D022B contract will identify enhancements that B/PB will make in specifying and managing that contract.

In addition, the review of B/PB's contractual relationship with the Department and its responsibilities is part of the Peterson Group's scope of services.

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List of Attachments

1. D022A Contract Value
2. B/PB L-665, dated July 29, 1994
3. D022A Contract Change Costs by Category
4. B/PB Letter L-614, dated April 27, 1994
5. Project Procedure 406 Design Contract Modification Rev 7, dated July 14, 1994
6. PCN-022, TSCS Coverage on South Boston Bypass/Haul Road
7. Documents Identifying DeLeuw's Performance Problems
8. Partial List of D022A Design Workshops During the Period March 1992 - January 1993
9. B/PB - DeLeuw Meetings on Deleuw Personnel/Performance Problems
10. C22A1 Bids List
11. Administrative Approval for C.T. Main as Subcontractor T91-2555-A, dated 10/3/91
12. B/PB Letter L-151, dated June 4, 1992
13. Partial List of Meeting Dates of D022A Project Engineer with MHD Projectwide Area Engineer April 1993 - July 1993.
14. B/PB-DeLeuw Letters Copied to the Department since June 1, 1994
15. D022A Waiver Request #1
16. D022A Waiver Request #2

